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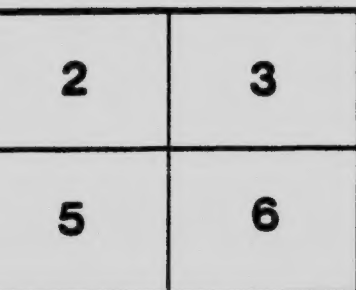
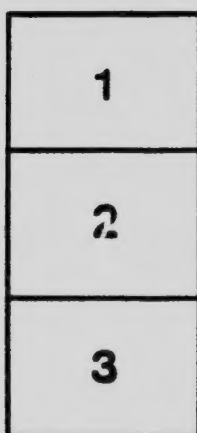
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BY

Assistant to Dominion Agrostologist.



POSSIBILITIES OF SEED RAISING

ADVANTAGES OF SEED RAISING.

In addition, home-grown seed, according to the experience of seed-growing farmers, produces larger and surer crops of mangels than seed obtained through the ordinary channels of commerce. Seed growing for home use therefore not only means saving money on the seed, but also increased yields of roots.

M. O. MALTE, Ph.D.,
Dominion Agrostologist.

(January, 1916.)

VARIETIES.

There is at present seed of a great number of so-called varieties offered for sale in Canada. Many of these are practically the same varieties under different names, but, even after allowing for a large duplication, there are still between forty and fifty distinct varieties to choose from. Roughly, these may be grouped into seven classes, viz.: Yellow Globe, Red Globe, Yellow Tankard, Red Tankard, Yellow Intermediate, Long Red, and the various types of Half-sugar mangels. Of these latter the majority are either intermediate or long, and vary in colour from white to intermediate between white and red, and white and yellow.

According to the variety tests conducted annually by the Dominion Experimental Farms, the most profitable varieties are found among the Half-sugar, Yellow Intermediate, and Long Red classes, the three heaviest yielding varieties being Giant Half Sugar White, Giant Yellow Intermediate, and Gate Post. Either of these varieties may be depended upon to produce a satisfactory crop in any section of Canada where mangel growing is profitable.

GROWING AND HANDLING OF SEED ROOTS.

The mangel is a biennial plant and requires two years to complete its life cycle. The first year the mangel itself is formed, and the second year this mangel throws out seed stalks which bear the seed. The seed grower must, therefore, grow the roots, harvest them in the fall, store them throughout the winter and plant them again the following spring in order to procure a crop of seed.

Selection of Seed Roots.—When choosing roots to be used for seed production the following year, a very close selection is advisable. All roots selected should be perfectly sound, free from diseases, and conform as nearly as possible to the ideal type of the variety. They should be uniform in colour, size, shape and general character of top. Prongy roots should be avoided.

Seed grown from roots selected, as outlined above, is much more likely to produce roots of a uniformly good type, than seed grown from the general run of roots. Purity of the variety should always be maintained and by careful selection the grower can not only maintain the purity but also improve the variety.

For seed, full grown or medium sized roots, perfect in all respects, should be selected. Abnormally large roots should not be selected. They are rarely perfectly sound, are difficult to store and keep, and do not produce a larger quantity, nor better quality of seed than normal specimens of the variety.

Where seed growing is carried out on a commercial basis, the seed is generally produced from so-called rootlings, i.e., roots which, on account of late seeding, have, at the end of the growing season, reached the thickness of a finger. Although advantageous, seed raising from rootlings cannot at present be generally recommended. The chief reason for this is that the rootlings do not exhibit the characters of the variety clearly enough, and as a consequence there is a danger of choosing roots, for seed raising, which in some particular lack in uniformity.

Harvesting Seed Roots.—When harvesting seed roots, rough handling should be avoided. Roots that are badly bruised or broken are very likely to rot, and the rotting roots may infect the sound ones, lessening their vitality and reducing their seed-producing capacity. The roots should be carefully pulled, leaving intact as many of the fibrous roots as possible. The top should be carefully trimmed off with a knife, but not so close as to injure the crown. Twisting off the top will often seriously injure the crown, and roots thus damaged will not send out satisfactory seed stalks.

Storing of Seed Roots.—Seed roots should be stored during winter in such a manner as to insure a maximum vitality at the time of planting the following spring. Excessive evaporation or growth, that would not seriously damage the roots for feeding purposes, will lessen their vitality and should be guarded against. Mangels for seed raising should, therefore, be kept at a temperature that is high enough to prevent freezing and yet low enough to prevent growth. A temperature of from 33 to 38 degrees F. will be found satisfactory. A well constructed and properly ventilated

cellar will usually afford satisfactory conditions for the storing of seed roots. Where cellar storage is not available or is unsatisfactory, the roots can be stored in pits outside.

(For pitting roots, see *Exhibition Circular No. 57*)

SEED RAISING.

Soil and Cultural Requirements.—Mangel seed can be grown profitably on many kinds of soil. A fairly light loam is preferable and should be used if available.

The land should be selected the year previous to planting. It should then receive an application of about 20 tons of barnyard manure to the acre, ploughed in, if possible, during the latter part of the summer. Throughout the remainder of the season the soil should be kept free from weeds, and in a good state of tilth, with the disc and drag-harrow.

As soon as it is possible to work the land in the spring, it should be ploughed and thoroughly worked into a good tilth. The field is then ready for planting.

Number of Varieties to Grow.—All kinds of beets, including mangels, sugar beets and garden beets, cross readily. As the value of the seed produced depends largely on its purity, it is imperative that arrangements be made to prevent crossings. The easiest and safest way to accomplish this is to **grow only one variety for seed.** The farmer who wants to grow a certain variety of mangels for seed is advised not to grow for seed any other variety of mangels or any variety of either sugar beets or garden beets, unless the seed plots can be located so far away from each other that danger of crossings between them is entirely out of the question. Under no circumstances should different seed plots be located less than three or four hundred yards apart.

Time to Plant.—As soon as the land can be conveniently worked, and the danger of heavy frost is past, seed mangels should be planted. If planted as late in the season as the middle of June, the seed may mature, but the yield will be much lower than if planting is done earlier.

During the hot weather of mid-summer the plants blossom freely and the seed sets readily, while, on the other hand, the general growth of the plant practically ceases. It is, therefore, imperative that the crop should be started as early as possible, in order that the plants may be large and strong by mid-summer, and thus capable of bearing a maximum amount of seed.

Planting.—At the time of planting care should be taken that the roots are not allowed to dry out by being exposed to bright sun for even a short time. If planting is done on bright days, cover the roots with wet bags or straw when hauling from the pits or cellars, and do not expose more roots than can be planted in a comparatively short time.

For permit of cultivation, the roots should be planted in rows 3 feet apart with the roots 2 feet apart in the row. Each root should be firmly set in the ground so that the crown is level with, or a little above, the surface of the ground. Long roots may be set in at an angle to avoid deep digging, but care should be taken to have the lower part of the roots at least 6 inches below the surface of the ground to prevent its drying out.

Planting is most satisfactorily done with a spade. One man digs holes of required size and depth, another places the roots in the holes and fills them in, pressing the earth firmly around the root, and a third distributes the roots. Three men working in this manner should, after becoming accustomed to the work, plant from one-quarter to a third of an acre per day.

If the roots are small they may be planted in furrows made with a plough. In this case one horse is generally used, with the pull arranged so it will walk on the unploughed land. The roots are laid on the sloping side of the furrow and are covered by the following two furrows. The roots are thus planted in every third furrow. After planting in this manner, it will usually be found necessary to go over the field with a hoe and cover such roots that are not set sufficiently deep, or uncover those buried too deep.

Cultivation.—During the early part of the season frequent cultivation is necessary to conserve moisture and keep down weeds. The stems of the mangel plant, however, are very brittle, and after they have attained a height of about 2 feet horse cultivation should cease. If weeds persist later, the hand hoe should be used.

Time to Harvest.—Harvesting should be commenced as soon as the most mature seed clusters have turned light brown. At this stage a great deal of the seed may look quite green, yet, on examination even the most green will be found quite hard in the centre and will ripen thoroughly in the stook.

Harvesting.—A good, sharp garden spade is a most satisfactory tool to use for cutting the seed crop. The extreme top of the root is cut off with a quick slanting blow, and the stalks are gathered by hand and tied in small sheaves. A man with a spade then butts the sheaves; that is, cuts the tops of the roots from the ends of the stalks. The sheaves are then stood up in rather open stooks. One man using the spade and two men binding and stooking should harvest one-half acre per day.

The crop should remain in stook until the seed is quite dry and hard. Mangel seed shatters easily and the sheaves should, therefore, be handled gently. In hauling from the field it is advisable to place several stooks on a large square sheet and tie the four corners together, thus making a large bag which may be hauled to the barn and emptied. Six sheets 12 feet square, filled to capacity, will make a fair load for an ordinary team.

Threshing and Cleaning.—Small quantities may be threshed with a flail, or the seed stripped from the stalks by hand.

Larger quantities can be threshed with an ordinary threshing machine. The machine should be fed slowly and the wind cut down as low as possible.

After threshing, the seed should be spread over a floor to a depth of not more than 8 inches until thoroughly dry. If bagged or piled deeply, when even the least bit damp, the seed heats quickly.

Mangel seed may be partially cleaned with a fanning mill, but bits of stem are often about the same size and weight as a seed cluster and cannot be separated readily by either wind or screen. A simple machine, consisting of an inclined canvas belt running over rollers set in a rack, with a hopper arrangement to drop the seed on the belt, will, however, do excellent work by friction. The bits of stem are usually somewhat flattened and when the belt is made to run over the rollers they stick to the canvas and are carried over the upper end while the seed clusters, which are more or less round, roll down the incline, thus effecting the separation.

For plans of such a machine, which is simple enough for anyone handy with tools to make, apply to the Dominion Agrostologist, Central Experimental Farm, Ottawa.

COST AND REVENUE.

An experiment with a view of determining the net profit of mangel seed produced per acre was carried out during 1915 by the Division of Forage Plants. The figures, as given below, are based on results obtained from a field one acre in size.

The total cost of growing one acre of mangel seed was \$79.70. The seed produced amounted to 1,134 pounds, which, it may be explained, is only an average yield.

With a wholesale price of 13 cents a pound, the revenue realized amounted to \$147.42, with a net profit of \$67.68.

SUBVENTIONS.

As an inducement to the growing of field root and vegetable seeds in Canada, the Dominion Government is willing to aid seed growers by cash subventions, full particulars of which can be obtained from the Seed Branch, Department of Agriculture, Ottawa. It may be stated here, however, that the purpose is to encourage selected seed, and only bona fide growers of such seed are eligible to receive the subventions.



